Before the FEDERAL COMMUNICATIONS COMMISSION Washington, D.C. 20554

In the Matter of

Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems ET Docket No. 00-258

Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use By The Mobile-Satellite Service ET Docket No. 95-18

The Establishment of Policies and Service Rules for The Mobile-Satellite Service in the 2 GHz Band

IB Docket No. 99-81

Petition for Rule Making of the Wireless Information Networks Forum Concerning the Unlicensed Personal Communications Service

RM-9498

Petition for Rule Making of UTStarcom, Inc. Concerning the Unlicensed Personal Communications Service

RM-10024

JOINT REPLY COMMENTS OF UTAM, INC. AND WIRELESS INFORMATION NETWORKS FORUM, INC.

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UTAM, Inc. 1 and Wireless Information Networks Forum, Inc. 2 (collectively, "Joint

The voting membership of UTAM, Inc. ("UTAM"), currently consists of Alcatel USA, ASCOM Wireless Solutions, Avaya (formerly the Enterprise Network Group of Lucent Technologies), Cortelco, CTP Systems, IWATSU America, Motorola, Inc., NEC America, Inc., Nitsuko America, Nortel Networks Inc., Siemens Information and Communication Networks, Inc., SpectraLink Corporation, ECI Telecom, Inc. and Toshiba. UTAM also has numerous associate members.

The Wireless Information Networks forum, Inc. ("WINForum") is an alliance of radio manufacturers that are working together to obtain and effectively employ spectrum for user-

Commenters") hereby respectfully submit their reply comments in response to the Federal Communications Commission's Further Notice of Proposed Rule Making ("FNPRM") in the above-captioned dockets.³

I. INTRODUCTION AND SUMMARY.

As made clear in their initial comments, the Joint Commenters are strongly opposed to any reallocation of the unlicensed PCS ("UPCS") band either for advanced services or for relocation spectrum for other services. The UPCS industry serves a wide variety of critical enduser needs, including many health and public safety interests. Further, as these frequencies are cleared of microwave incumbents—the culmination of vast financial and other efforts put forth by UPCS manufacturers and industry members—even more UPCS service offerings will become available to the public. As discussed below, the record in this proceeding supports the Joint Commenters' principal contentions that the Commission should maintain the present allocation for UPCS applications and should affirmatively promote UPCS development by increasing flexibility and permitting the deployment of isochronous devices in the 1910-1920 MHz band. The Joint Commenters submit that while it may be possible to increase flexibility by permitting additional uses in the 1910-1920 MHz band to provide service to subscribers in rural areas—as suggested by UTStarcom and others—present proposals would create severe interference hazards that first must be addressed and ameliorated before the Commission should proceed forward. In addition, the Joint Commenters note that any additional users in the UPCS band must participate fully in all obligations for funding the relocation of incumbent microwave licensees. Finally, the

provided voice and data services. WINForum's membership includes, among others. manufacturers of unlicensed devices operating under Part 15 in the UPCS spectrum band.

Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services. including Third Generation Wireless Systems, ET Docket No. 00-258, Memorandum Opinion and Order and Further Notice of Proposed Rulemaking, FCC 01-224 (rel. Aug. 20, 2001) ("FNPRM").

Joint Commenters emphasize their initial concern that the UPCS issues in this docket are significant, time-sensitive and complex; accordingly, as suggested by many commenters, the FCC should act swiftly to remove 1910-1930 MHz from consideration for 3G services and instead implement certain changes to increase the flexible and efficient use of this spectrum.

II. THERE IS WIDESPREAD INDUSTRY SUPPORT IN FAVOR OF MAINTAINING THE PRESENT ALLOCATION FOR UPCS.

A. Far from Being Underutilized, UPCS Spectrum Usage is Vibrant and Increasing as Relocation Efforts Are Completed.

Consistent with the Joint Commenters' initial comments, which explain that UPCS devices are presently used by hundreds of thousands of end users, the record in this proceeding provides strong evidence that the nascent UPCS industry has been tremendously successful in deploying products to satisfy diverse end-user needs. As explained by Nortel Networks, Inc., far from being 'underutilized' spectrum," the isochronous band "has already reached saturation of traffic" in some areas. Nortel notes that it currently has over 100,000 users of UPCS devices operating in the isochronous band. Similarly, in response to the FNPRM's assertion that "only limited wireless PBX use has begun in the 1920-1930 MHz segment," Motorola observes that "this band is serving a large, diverse, and fast growing community of end users," and that "[t]oday, more than 400,000 users depend on isochronous devices."

The record also demonstrates that, beyond serving a wide-ranging variety of needs,

UPCS devices serve mission-critical, health and public safety needs. For example, Nortel notes

⁴ Comments of UTAM, Inc. at 7-8 ("UTAM Comments"); Comments of the Wireless Information Networks Forum, Inc. at 5 ("WINForum Comments").

Comments of Nortel Networks, Inc. at 4 ("Nortel Comments"); Comments of Motorola, Inc. at 20 ("Motorola Comments"); Comments of Avaya Inc. at 5 ("Avaya Comments"); Comments of NEC America, Inc. at 2-4 ("NEC Comments").

Nortel Comments at 4.

Motorola Comments at 20 ("Motorola Comments").

that "many of the environments in which this equipment is operated include hospitals where reliable service with low power operation is necessary to preclude interference to sensitive medical instruments." Nortel explains that "[c]ell-phones are unacceptable in these environments due to the potential for interference." As WINForum stated, because of the Part 15 etiquette that governs the UPCS band, "[t]he UPCS band is unique among unlicensed spectrum, in that it offers end users reasonable assurances that communications will be free from interference." Present users of the UPCS band could not be relocated to other frequencies without sacrificing the integrity of their present operations and offerings. While the Joint Commenters believe that there may be means to accommodate other, flexible uses of the 1910-1920 MHz band, as discussed in greater detail below, the Joint Commenters emphasize that the Part 15 etiquette has been critical to the success and usefulness of the UPCS band and should be protected.

The record also makes clear that the Commission must honor the implicit promise made to the UPCS industry to induce them to invest so heavily in band-clearing and product development. In its role as the coordinating body designated with overseeing relocation of microwave incumbents, and with the financial assistance of UPCS manufacturers, UTAM has already spent and incurred liabilities of over \$60 million in clearing the UPCS band. ¹¹ Furthermore, in addition to the funds and significant coordination efforts expended to clear the band, manufacturers have made considerable investments in the development and deployment of UPCS products. As Avaya explains, "Notwithstanding the many challenges to deployment of

⁸ *Id.*

⁹ Id.

WINForum Comments at 5.

UTAM Comments at 3.

UPCS devices, many manufacturers have invested huge sums to develop the necessary technologies, features, and procedures unique to this band Should the FCC decide to reallocate the isochronous band at this juncture, after so much financial and human capital has been invested in UPCS technology, the FCC will be dealing the industry an unexpected and potentially fatal blow."

As a result, the unsupported assertions of commenters such as Telephone and Data Systems, Inc., that "there is little utilization of the 1910-1930 MHz band" stand in stark contrast to the record comments of those actually involved with the band. And, the record also demonstrates that the large number of users exists despite the challenges posed by the 1910-1930 MHz band. First, the UPCS allocation is relatively new; and second, the relocation of microwave incumbents from this band has necessitated delays in the widespread deployment of certain devices. As UTAM explains in its initial comments, UPCS is a nascent industry that is only beginning to achieve its potential, as the band enters the final stages of clearing and as UPCS industry members are finally realizing the investments they have made in deploying UPCS devices that strictly conform to the Part 15 etiquette. As Motorola states, "[t]he market for isochronous devices is only just beginning to emerge"; furthermore, as NEC explains, the number of UPCS end users grew 31 percent in 2000, as compared to the 27 percent growth in

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Avaya Comments at 5-6; see also NEC Comments at 15-16 ("Relying on . . . unambiguous statements of commitment to the development of a UPCS market, NEC and others invested significant amounts of capital into the research, development and marketing of UPCS devices. Likewise, thousands of enterprises made good faith investments in UPCS products, attracted by the promise of reliable communications due to the special spectrum allocation and rules for UPCS devices.").

Comments of Telephone and Data Systems, Inc. at 6 ("TDS Comments").

UTAM Comments at 6-7 ("With the anticipated full clearing of the UPCS band . . . vendors will finally be in a position where they can deploy new UPCS products, particularly nomadic devices, and end users will be able to enjoy expanded service offerings.").

Motorola Comments at 20.

CMRS during the same industry. ¹⁶ In light of these comments, a determination that the spectrum is "underutilized" is simplistic and, frankly, inaccurate. As NEC aptly states, "[i]n the past, the Commission has found that nascent, developing industries should not be targeted for reallocation"; the Commission accordingly should refrain from forcing "UPCS operations to relocate while they are still in their early developmental stages."

B. The Commission Should Permit Flexible Uses Within the 1910-1920 MHz Band.

The Commission should permit the entire 20 MHz UPCS band to be used by isochronous devices; as WINForum explains in its comments, "the additional 10 MHz of spectrum available from cross-over use of the 1910-1920 MHz band would confer substantial long-term benefits, particularly in high-density areas such as multi-tenant high-rises and industrial parks." The record evidences broad support for WINForum's proposal. As Motorola observes, the additional 10 MHz of spectrum "is needed to meet the demand for isochronous UPCS service" in high-density areas; additionally, "many potential isochronous UPCS applications are constrained by the availability of only 10 MHz of spectrum." NEC notes that the additional 10 MHz will provide the ability to service customers with high user densities in large, open spaces; NEC further notes that this spectrum will permit the offering of "significantly higher data rates," with "data and voice on a converged wireless platform," which would "make wireless PBXs more attractive to many potential customers, thereby increasing the deployment of UPCS devices and

NEC Comments at 10.

¹⁷ *Id.* at 13.

WINForum Comments at 8.

Motorola Comments at 20-21; NEC Comments at 25; Avaya Comments at 5; Comments of the Rural Telecommunications Group at 6.

Motorola Comments at 20-21.

making a more efficient use of the spectrum in the entire 1910-1930 MHz band."²¹ In light of the vast benefits afforded by opening the asynchronous band to isochronous uses, UTAM joins the many commenters who urge the Commission to proceed expeditiously to grant WINForum's Petition.

The Joint Commenters also note that, to the extent that proposals to permit flexible use of the isochronous band are consistent with Part 15 etiquette or otherwise can be tailored to alleviate any interference concerns, such uses potentially may be accommodated. The Joint Commenters are open to permitting flexible use of 1910-1920 MHz to develop wireless networks, as suggested by UTStarcom, Midvale Telephone Exchange, Inc., PHS MoU Group and others. As UTStarcom explains, given that the "1910-1930 MHz band is not well suited for wireless applications other than the relatively low-power, limited-area, limited-mobility services for which it originally was allocated," and that "its use as a relocation band for most of the services that might be displaced by 3G services could likely interfere with licensed PCS." The Joint Commenters acknowledge that the Commission should ensure efficient use of the asynchronous band through options *other* than reallocation, and that, with certain limitations, the establishment of community wireless networks *within rural areas* may be such an option. Accordingly, the Joint Commenters are open to accommodating rural telephone service at 1910-1920 MHz, provided that any new entities using the UPCS band: (1) participate fully in funding

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NEC Comments at 25.

See Comments of UTStarcom, Inc. at 4-9 ("UTStarcom Comments"); Comments of PHS MoU Group at 1 ("PHS MoU Comments"); Comments of Midvale Telephone Exchange, Inc. at 2; Comments of Blackfoot Telephone Cooperative, Inc. at 2. The Joint Commenters note that, to the extent these requests seek accommodation to deploy wireless networks at 1920-1930 MHz, the Joint Commenters would voice their strong opposition. Any potential flexibility for alternative uses, to include PHS or DECT-type technology, should be limited to the asynchronous band and should not implicate the isochronous band in any manner.

UTStarcom Comments at 3-4.

microwave incumbent relocation costs; (2) conform to the listen-before-talk protocol; (3) operate at power levels *lower* than fully-licensed PCS mobile subscriber levels; (4) bear the burden of demonstrating, prior to deployment of operations, that they will not cause interference with UPCS uses; and finally, (5) agree to shut off operations in the event of interference with UPCS operations. As explained by both UTAM and WINForum's initial comments, the Part 15 etiquette provides a certain degree of assurance that communications will be free from interference;²⁴ increasing power levels may serve only to undermine the assurance that makes the 1910-1930 MHz band unique.

Because of the necessity to protect adjacent, licensed services and to ensure that present UPCS offerings retain their present levels of performance and reliability, the Joint Commenters disagree with Panasonic, who "urge[s] the Commission to act quickly to change the Unlicensed PCS etiquette and power level rules to allow PHS and other globally standard protocols to be used in PBX applications in the United States." Any change in spectrum rules or increase in power levels must not be effectuated hastily; rather, any such rule changes must be enacted only after careful and considerable deliberation, and after a thorough demonstration that no interference will be caused to present band users.

III. THE UPCS BAND IS TECHNICALLY UNSUITABLE FOR PURPOSES OTHER THAN UPCS.

The Joint Commenters agree with those who emphasize the technical unsuitability of the UPCS band for either advanced services or even for use as relocation spectrum. The UPCS band presently serves the critical function of acting as a guard band for adjacent, licensed PCS users. ²⁶

See UTAM Comments at 16; WINForum Comments at 5.

²⁵ Comments of Panasonic at 1 ("Panasonic Comments").

See Comments of the Cellular Telecommunications & Internet Association ("CTIA") at 3 (noting that the UPCS band "sits between the paired spectrum blocks currently used for PCS"

High-powered uses, for either advanced services or for relocated services such as MDS, would create unacceptable interference levels with these licensed uses. The Joint Commenters also note that even commenters such as AT&T Wireless and Cingular Wireless, while cursorily suggesting that the UPCS band is ripe for reallocation—which it is not, as described below—express reservations about the usefulness of this spectrum for relocation use or for advanced services.²⁷ For example, while Cingular supports reallocation of 1915-1925 MHz for advanced services using TDD (with a guard band, effectively forcing 10 MHz to lie fallow and underutilized, precisely what the Commission is attempting to avoid with this proceeding), Cingular admits that "[t]his spectrum is not optimal for the provision of advanced wireless services, given its proximity to PCS bands transmitting in opposite directions that would cause harmful interference.",28

First, as explained by commenters such as Avaya, the UPCS band acts as much-needed

and that "in considering options . . . the Commission must ensure that whatever services are authorized in this band do not interfere with adjacent PCS services. This constraint would as a practical matter limit the usefulness of the band for most advanced mobile wireless services because of the guardband requirements that would be necessary to protect existing PCS services from interference. It may, however, be appropriate for additional flexibility in this band to ensure it is used as efficiently as possible, but any such modifications should be done in a way that ensures there is no potential for interference with the adjacent PCS bands."). UTAM agrees with CTIA's assessment, as stated here, and therefore supports WINForum's and, with some reservations, UTStarcom's requests to increase flexibility at 1910-1920 MHz.

See Cingular Comments at 12-13; Comments of the Wireless Communications Association International, Inc. at 7; Comments of the Wireless Communications Division of the Telecommunications Industry Association at 4 (noting the close proximity of the 1910-1930 MHz band to PCS operations and the concomitant need for safeguards): Comments of AT&T Wireless Services, Inc. at 4 ("The [UPCS and lower MDS frequency assignments], standing alone, are not paired, and are not consistent with current international allocations. Further, considered alone, they are simply too small to make any meaningful difference in the CMRS industry's needs. Thus . . . unless other allocation decisions are made . . . these bands will not be useful for meeting industry's 3G needs."). Clearly, the equivocation evidenced by these commenters demonstrates the many reservations even proponents of reallocation have about the utility of the UPCS band for alternative uses.

Cingular Comments at 12.

guard band spectrum. ²⁹ As WINForum states:

[e]ven if the spectrum could be somehow paired for 3G mobile operations, the result would be to create a direct adjacency between a base transmit band and a mobile transmit band. During the PCS allocation process, the UPCS band was allocated, in part, to create necessary separation to prevent adjacent channel interference from higher power base stations from overwhelming much lower power mobile handsets. There is no basis for believing that base/mobile 3G systems or services relocated in support of 3G would behave in a different manner.³⁰

Again, even among those proponents of reallocating the 1910-1930 MHz band, there is expressed concern and skepticism with respect to the limited ability of the UPCS bands to provide a 3G solution. As Ericsson notes, "because the 1910-1930 MHz band is proximate to the PCS bands, it is imperative that any new services licensed in this band have sufficient safeguards to protect neighboring services and carriers." The Joint Commenters submit that new, higher-powered services simply *cannot* be licensed in these bands without unduly and unacceptably interfering with neighboring licensed operators.

Second, in light of the foregoing and for similar reasons, the Joint Commenters vehemently disagree with commenters such as ArrayComm, who suggest that the 1910-1930 MHz band might be suitable for either advanced services or for use as relocation spectrum.³² Technical limitations render the 1910-1930 MHz band unsuitable for purposes other than low-power UPCS use, including for use for time division duplexing ("TDD") operations.³³ The Joint

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See, e.g., WINForum Comments at 9; Avaya Comments at 10.

WINForum Comments at 9.

Comments of Ericcson at 7; *see also* Comments of Cingular at 12 ("Cingular Comments").

See Comments of ArrayComm, Inc. at 5-7 (discussing conversion of the UPCS band for TDD). See also Cingular Comments at 12; Comments of Siemens Corporation at 2 (suggesting that the UPCS band would be appropriate for TDD and FDD technology).

Even ArrayComm recognizes that "[i]f 1910-1920 MHz were to be the subject of reallocation, technical safeguards, such as guardband[s] or filters, would probably be needed to protect PCS systems from unwarranted interference, and *vice versa*." *Id.* at 6-7. More than "probably," Motorola's interference analyses demonstrate that such guardbands would be an

Commenters refer the Commission to the detailed interference analyses submitted by Motorola, which demonstrate the interference between TDD and FDD systems (such as those employed by the 2 GHz PCS networks). As Motorola explains, the evaluation of "interference between TDD and FDD base stations indicate that, at a minimum, a 5 MHz guard band would be required at both the upper and lower frequencies that a TDD base station may operate and, even then, additional filtering and/or close coordination of system deployment would be required."³⁴ Motorola goes on to explain that recent studies indicate that "even guard bands of 5 MHz to 10 MHz will be unable to eliminate base station to base station interference."³⁵

The Joint Commenters note that the suggestion to utilize the UPCS bands for MDS is particularly difficult to reconcile with sound public policy. Illustrating the illogic inherent in shoehorning a high-power fixed service in the midst of low-power mobile services, even those in favor of reallocating UPCS for MDS should recognize that a substantial guard band would be required.³⁶ Even taking, as a baseline assumption, the incorrect assertion that the UPCS band is unused and will remain unused, the guard bands needed to reallocate UPCS to support MDS may well trade 10 MHz of UPCS isochronous use—and cause substantial, and potentially life threatening, dislocation and crippling costs—to support the entertainment uses currently accommodated in 10 MHz of MDS spectrum. Indeed, the Joint Commenters believe the potential upheaval occasioned by the reallocation of UPCS would dwarf any potential for adverse effects experienced by MDS users who have viable alternatives to video and data

imperative and a certainty; further, the technical issues render such a reallocation infeasible and ill-advised. See Motorola Comments at 16.

Id.

³⁵ Id.

See Comments of Verizon at 9 ("Verizon Comments") ("A relocation of MDS operations to the 1910-1930 would raise . . . concerns about potential interference to/from adjacent PCS operations in the 1850-1910 MHz and 1930-1990 MHz bands.").

delivery. Moreover, while the Joint Commenters' proposed solution opens the door to expanded use of all 20 MHz in the 1910-1930 MHz band, the MDS proposal effectively orphans 10 MHz of spectrum and renders it useless for any purpose for all time.

The Joint Commenters also agree with those commenters who state that band-sharing is infeasible.³⁷ The Joint Commenters agree with NEC that "[t]he operation of a single 3G device, which will emit at higher power levels than wireless PBX handsets, could easily disrupt all wireless PBX communications within one or more picocells. Multiple 3G devices could shut down an enterprises's entire wireless communications system."38 In sum, as Motorola states, "If the Commission were to allocate the 1910-1930 MHz band for shared use by UPCS and either 3G or MDS systems, the resulting interference would make UPCS devices unusable."39 For these reasons, while the Joint Commenters support increased flexibility with respect to the UPCS bands, as discussed in greater detail above, the Commission must refrain from reallocating these bands.

Finally, the Joint Commenters agree with the many commenters who support separation of the UPCS issues from the remainder of the advanced services proceeding. 40 WINForum and UTAM strongly urge the Commission to initiate a separate rule making proceeding to address UPCS concerns in an expedient manner. The Joint Commenters are concerned that the FNPRM already has created market confusion among industry members and end users; this confusion

³⁷ See, e.g., Avaya Comments at 8 (stating that "the Commission cannot 'grandfather' existing UPCS users and permit coexisting operations in the 1920-1930 MHz band without undermining the benefits afforded by this band."); NEC Comments at 6; Motorola Comments at 18.

³⁸ NEC Comments at 6.

³⁹ Motorola Comments at 18.

See, e.g., PHS MoU Comments at 1 ("The PHS MoU Group requests that the FCC separate the rule making for the 1910-1920 MHz band from the more complex remainder of the 3G proceeding "); Panasonic Comments at 2; Comments of Quantum Communications, Inc. at 2; Comments of UTStarCom, Inc. at 8; WINForum Comments as 13-14.

very well may undermine the financial stability of the UPCS industry, especially if these UPCS issues are addressed in a protracted manner and in conjunction with the multitude of other, non-UPCS reallocation issues raised in this proceeding.

IV. CONCLUSION.

In sum, the Joint Commenters urge the Commission to refrain from reallocating UPCS frequencies for either advanced services or for use as relocation spectrum. Instead, the Commission should permit flexible use of the asynchronous band, thereby promoting the development of UPCS. As explained above, the Commission cannot move forward and reallocate the UPCS band generally, and the isochronous band particularly, without acting against the expressed interests of a vast number of industry members who have relied, in good faith, upon prior Commission policy. The comments in this proceeding indicate that UPCS devices are satisfying mission-critical needs and, indeed, that isochronous uses have reached saturation in certain high-density, site-specific areas and that cross-over use in the 1910-1920 MHz band is therefore warranted and appropriate. The Joint Commenters are also open to the possibility that the asynchronous band might be used for the provision of services to rural endusers; as explained above, however, such operations would necessitate extensive technical and other analyses, undertaken and coordinated by the proponents of such uses, before any action is taken. Furthermore, any new users would be subject to the same funding obligations that are presently shared by UPCS industry members. In light of the numerous, time-sensitive and complex UPCS concerns raised herein, the Joint Commenters renew their initial request that the Commission sever these UPCS issues and initiate a separate rule making proceeding to expeditiously resolve these matters.

Respectfully Submitted,

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